

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A glass matrix composition for a high operating temperature sealed assembly in ceramic electrolyte electrochemical conversion devices, consisting essentially by mol percent of:

56 < SiO₂ < 75;

11 < BaO < 30; and

2 < MgO < 14, said composition having the characteristics of being chemically resistant to oxidizing and reducing conditions encountered in sealing solid oxide fuel cells ~~and the matrix composition remaining in a glassy state after sealing at temperatures up to 1200°C.~~

2. (previously presented) The glass matrix composition of claim 1, consisting essentially by mol percent of:

60 < SiO₂ < 75;

15 < BaO < 20; and

7.5 < MgO < 12.5.

3. (previously presented) A glass matrix-ceramic particulate composite consisting essentially by mol percent overall of about:

55 < SiO₂ < 65;

5 < BaO < 15;

25 < MgO < 35; and

a forsterite phase consisting of Mg₂SiO₄.

4. (previously presented) The glass matrix-ceramic particulate composite of claim 3, consisting essentially by mol percent overall of about:

57 < SiO₂ < 63;

$7 < \text{BaO} < 13$;
 $27 < \text{MgO} < 33$; and
a forsterite phase consisting of Mg_2SiO_4 .

5. (previously presented) The glass matrix composition of claim 1, consisting essentially by mol percent of:

$56 < \text{SiO}_2 < 75$;
 $11 < (\text{BaO} + \text{SrO}) < 30$; and
 $2 < \text{MgO} < 14$, said composition having the characteristics of being chemically resistant to oxidizing and reducing conditions encountered in sealing solid oxide fuel cells ~~and the matrix composition remaining in a glassy state after sealing at temperatures up to 1200°C.~~

6. (previously presented) The glass matrix-ceramic particulate composite of claim 3, consisting essentially by mol percent overall of:

$55 < \text{SiO}_2 < 65$;
 $5 < (\text{BaO} + \text{SrO}) < 15$; and
 $25 < \text{MgO} < 35$.

7-12. (cancelled)

13. (previously presented) A glass matrix composition consisting essentially by mol percent of:

$56 < \text{SiO}_2 < 75$;
 $11 < \text{BaO} < 30$; and
 $2 < \text{MgO} < 14$.

14. (previously presented) A glass matrix-ceramic particulate composite consisting essentially of:

a glassy phase consisting of (by mol percent)

$56 < \text{SiO}_2 < 75$;

$11 < \text{BaO} < 30$;

$2 < \text{MgO} < 14$; and

between 15 and 40% by weight (between 5 and 30 mol percent) of a forsterite phase consisting of Mg_2SiO_4 .

15. (withdrawn) A high operating temperature sealed assembly between high thermal expansion solid components comprising:

a seal-forming material having a glassy matrix phase and a crystalline phase, the overall composition consisting essentially by mol percent of about:

$55 < \text{SiO}_2 < 65$;

$5 < \text{BaO} < 15$;

$25 < \text{MgO} < 35$.

16. (withdrawn) The sealed assembly of claim 15, further comprising:
an ionic-conducting stabilized material selected from the group consisting of zirconia, ceria, yttria stabilized zirconia (YSZ), magnesia-calcia stabilized zirconia, and doped ceria;

composite porous cermets selected from the group consisting of stabilized zirconia, ceria and metals selected from the group consisting of Ni, Cu, Ag, Au, stainless steel, and chromium alloys;

electronically-conducting materials selected from the group consisting of strontium-doped lanthanum manganite (LSM) strontium doped lanthanum chromite and oxidized chromium-containing metal alloys;

mixtures of the glass matrix with metals selected from the group consisting of Ni, Cu, Ag, Au, stainless steel, and chromium alloys; and

electrically-insulating structural materials selected from the group consisting of alpha-alumina, spinel, and forsterite.

17. (withdrawn) The sealed assembly of claim 15, wherein the seal-forming material provides an essentially gas-tight structure for separation of respective flows in an anode and a cathode of an electrochemical device, the device being selected from the group consisting of a solid oxide fuel cell, an oxygen electrolyzer, an oxygen-ion conductor-based chemical gas sensor, and a NO_x -removing electrocatalyst.

18. (withdrawn) A high temperature seal between components made from yttria-stabilized zirconia comprising:

a sealing glass able to tolerate extended operation at temperatures above 850°C and having a sufficiently high coefficient of thermal expansion to match that of yttria-stabilized zirconia.

19. (previously presented) A glass matrix-ceramic particulate composite consisting essentially of:

a glassy phase consisting of (by mol percent)

$56 < \text{SiO}_2 < 75$;

$11 < \text{BaO} < 30$;

$2 < \text{MgO} < 14$, said composition having the characteristics of being chemically resistant to oxidizing and reducing conditions encountered in sealing solid oxide fuel cells and the matrix composition remaining in a glassy state after sealing at temperatures up to 1200°C ; and

between 15 and 40% by weight (between 5 and 30 mol percent) of a forsterite phase consisting of Mg_2SiO_4 .

20. (previously presented) The glass matrix-ceramic particulate composite of claim 19, consisting essentially of:

a glassy phase consisting of (by mol percent)

$67 < \text{SiO}_2 < 75$;

$10 < \text{BaO} < 20$;

$7.5 < \text{MgO} < 12.5$; and